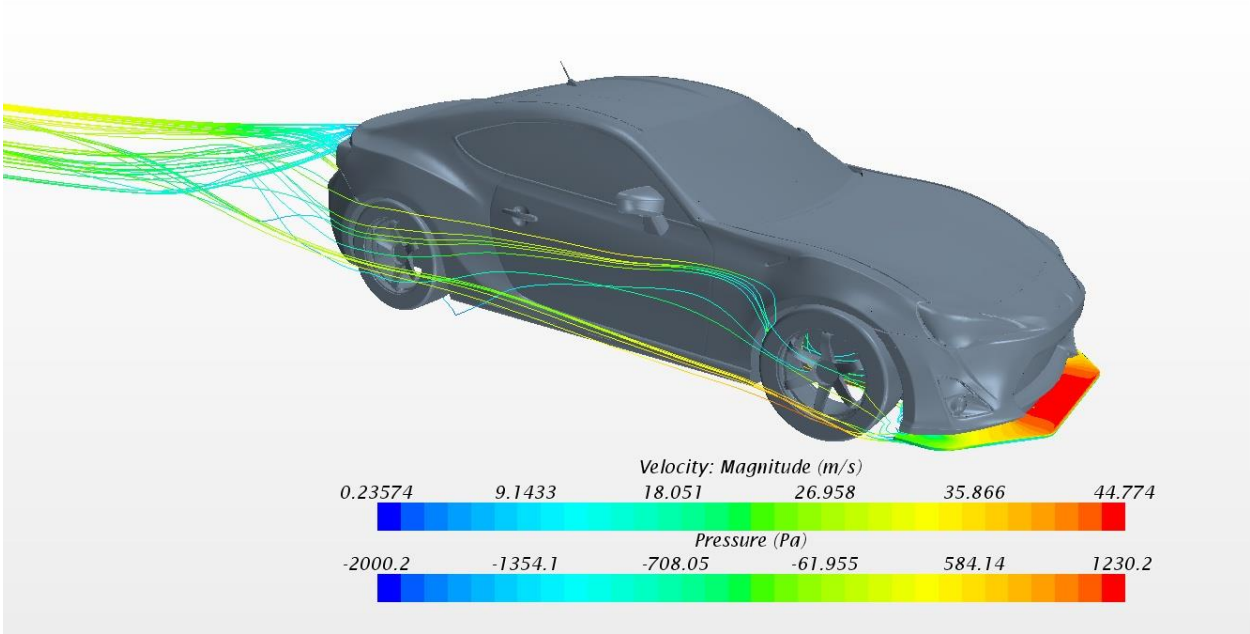
Race Upgrade Kit

Informative Packet

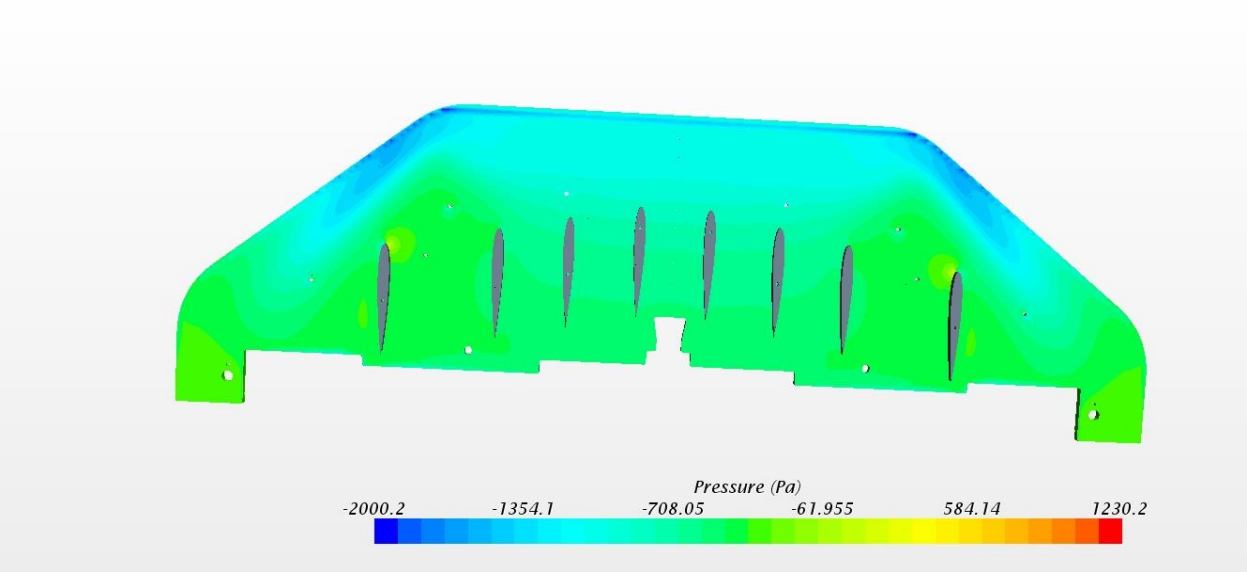
Purpose:
This document contains diagrams, information, and notes regarding the CFD analysis of the race upgrade package for the FT-86 SpeedFactory street front splitter.

Design:
The street front splitter was designed for those who want an aggressive aesthetic upgrade, a more planted feel, and slightly better fuel economy while at **highway** speeds. However, at 100 MPH and beyond, the splitter begins to see tripe digit loads and the necessity to support the leading edge of the splitter begins to become apparent. For reference, at 100 MPH, our CFD analysis showed that the race splitter is being subjected to 150 pounds of downforce, evenly spread across the leading edge of the splitter.



While improving the rigidity of the leading edge of the splitter is enough, we wanted to improve upon our design even further and increase downforce more. With the 8 attached vanes in strategic placement on the splitter, we were able to reduce lift an addition 64% over the street front splitter with a drag penalty of only 5%! These vanes use a basic principle of fluid dynamics (Bernoulli's Principle) that states as you increase velocity, pressure must decrease. When this reduction in pressure is on the bottom side of the car, downforce is achieved.

Both the vanes and the placement of vanes were tested a multitude of times before we found the winning combination.



Data:

A few things to note about the data displayed below. All percentages are compared to a stock body car. Negative percentage denotes decrease, positive percentage an increase. Increases in downforce and decreases in drag are both beneficial to the car.

	Drag Force vs. Stock	Downforce vs. Stock	Front Downforce vs. Stock	Rear Downforce vs. Stock	Vehicle Downforce Increase vs. Stock @ 100 MPH
Street Front Splitter	-0.24%	260.13%	185.04%	485.49%	43.1 lbs
Race Upgrade Kit	5.00%	362.85%	211.87%	815.99%	60.1 lbs

Table 1: Performance ratings of various parameters

Conclusion:

With the race upgrade on your car you can expect a bump in downforce, and a leading edge that can withstand the pressures exerted during race speeds. While the kit is designed to handle over 200 pounds of force, we ***do not*** recommend standing on the splitter as this imposes a load that is not indicative of real world behavior. The splitter does retain some flexibility on the very front for those unfortunate accidents when the lip hits going up a driveway or speed bumps. This allows the front lip to move upward slightly and not bend the splitter tie rods.